APPENDIX A

```
int RunPDet (int *ADC_out)
{
  static int PD_In[2]; /*scaled FIR output*/
  if (!Ctrl.AcqTrk) {
     Zpr.PD_Fave = (int)((abs(PD_In[0] - Zpr.PD_ykFd)+1)/2);
     Zpr.PD_Save = (int)((abs(PD_In[1] - Zpr.PD_ykSd)+1)/2);

     Zpr.PD_AmpEst = (int)(sqrt(pow(Zpr.PD_Save,2) + pow(Zpr.PD_Fave,2)));

     Zpr.PD_ykFd = PD_In[0];
     Zpr.PD_ykSd = PD_In[1];

     PD_In[0] = (ADC_out[0];
     PD_In[1] = (ADC_out[1];

     Zpr.PD_condition[1] = Zpr.PD_condition[0];
     Zpr.PD_condition[0] = (Zpr.PD_ykFd + PD_In[0]) < Zpr.PD_Thrsh_Low;

     Zpr.PD_condition[3] = Zpr.PD_condition[2];
     Zpr.PD_condition[2] = (Zpr.PD_ykSd + PD_In[1]) < Zpr.PD_Thrsh_low;
     Zpr.PD_condition[4] = Zpr.PD_AmpEst > Zpr.PD_Thrsh_High;

     if(Zpr.PD_Counter < Zpr.PD_Qual)
         if(Zpr.PD_condition[0] && Zpr.PD_condition[1] &&
              Zpr.PD_condition[2] && Zpr.PD_condition[3] &&
              Zpr.PD_condition[4])
            {
                Zpr.PD_Counter++;
            }
         else  {
                Zpr.PD_Counter = 0;
         }
  }
  else  {
         Zpr.PD_Fave = Zpr.PD_Save = 0;
         Zpr.PD_ykFd = PD_In[0] = 0;
         Zpr.PD_ykSd = PD_In[1] = 0;
         Zpr.PD_AmpEst = 0;
         Zpr.PD_condition[1] = Zpr.PD_condition[0] = 0;
         Zpr.PD_condition[3] = Zpr.PD_condition[2] = 0;
         Zpr.PD_condition[4] = 0;
         Zpr.PD_Counter = 0;
  }
     return (Zpr.PD_Counter);
}
```

Legend of the code variables with respect to the patent application:

ADC_out[0] = current even sample Se (90c, FIG. 7) from ADC 50 (FIG. 5)
ADC_out[1] = current odd sample Oe (91c, FIG. 7) from ADC 50

PD_In[0] = first previous even sample Se - 1 (90b, FIG. 7)
PD_In[1] = first previous odd sample Oe - 1(91b, FIG.7)

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Zpr.PD_ykFd = second previous even sample Se - 2 (90a, FIG. 7)
Zpr.PD_ykSd = second previous odd sample Oe - 2 (91a, FIG. 7)

Zpr.PD_Fave = AE (equation 5)
Zpr.PD_Save = AO (equation 6)

Zpr.PD_AmpEst = Amp (equation 7)

Zpr.PD_ykFd + PD_In[0] = E1, E2 (equations 1-2)
Zpr.PD_ykSd + PD_In[1] = 01, 02 (equations 2-4)

Zpr.PD_Thrsh_Low → Threshold_Low (equations 8-11)
Zpr.PD_Thrsh_High → Threshold_High (equation 12)
```